Intelligent Flamefinder Detection and Alert System (IFDAS), Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

NASA test and launch facilities, such as those at Stennis, Marshall, and other locations, require large amounts of hydrogen as a primary rocket fuel; hydrogen is also of growing interest in the private sector. Unfortunately, hydrogen burns with an essentially invisible flame, making detection of hydrogen fires difficult. Current methods of detecting hydrogen leaks and fires are limited in a number of ways; video-based methods (IR and otherwise) are promising, but can be seriously misled by reflections and currently require human operators (increasing expense and leading to problems of attentiveness). To address these and other challenges, IEM proposes to create the Intelligent Flamefinder

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Detection and Alert System (IFDAS). Drawing on smart video analysis and other smart sensor work for NASA, the New York State Energy Research and Development Authority, the Department of Transportation, the U.S. Navy, and others, and building on an exclusive license of patented NASA technology, IEM will create a smart hydrogen fire detection system which will reliably detect even small (less than 3") flames, ignore false signals from reflections of flames, the sun, or other heat/light sources, accurately determine the location of the flames, and automatically alert the appropriate individuals or systems of the existence, extent, and location of the fire, without the need for human operators or intervention prior to the alert. IFDAS will also be able to interface with current sensing systems and integrate their data to provide a comprehensive overview of the situation using all available data. The individual units will be compact, low-power, and rugged, for use indoors or outdoors, and be applicable for uses in NASA, the military, and commercial enterprises involving hydrogen or other flammable materials which have difficult-to-detect flames.

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Stennis Space Center (SSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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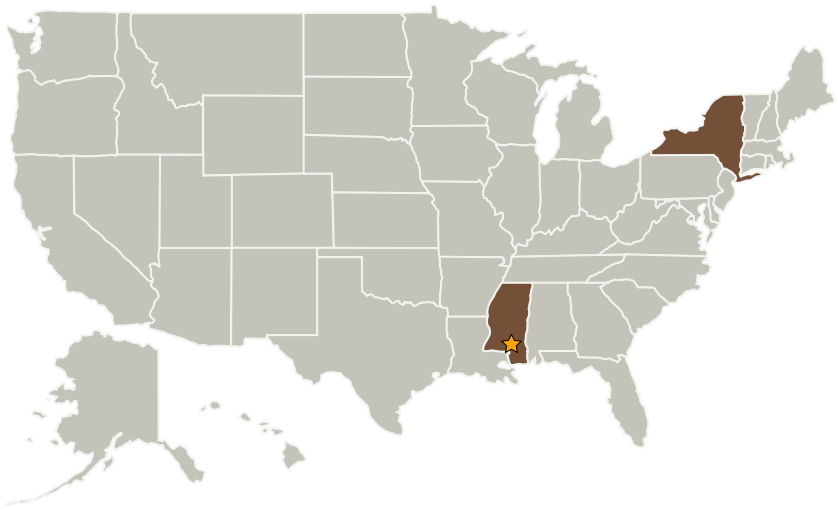
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Stennis Space Center(SSC)	Lead Organization	NASA Center	Stennis Space Center, Mississippi
International Electronic Machines Corporation(IEM)	Supporting Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	Troy, New York

Primary U.S. Work Locations	
Mississippi	New York

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Ryk Spoor

Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
  - TX13.2 Test and Qualification
    - TX13.2.2 Propulsion, Exhaust, and Propellant Management